because these services were excluded for universal service purposes, they should be excluded for UNE purposes as well. What AT&T/WorldCom conveniently fail to acknowledge is that, because AT&T/WorldCom include special access and toll service demand when sizing the MSM's simulated network, these services necessarily would have to contribute to the demand for the general support assets. Thus, these services should be incorporated into any calculation of general support costs. By ignoring these services, AT&T/WorldCom significantly underestimate the demand for general support assets and consequently understate the level of general support costs necessary to maintain a fully-functioning network.

E. Petitioners' Switching and Transport Module Cannot Produce Reliable Transport UNE Cost Estimates

The MSM's Switching and Transport Module ("MSM IOF module" or "IOF Module") is inappropriate for use in a UNE proceeding.[188/] First, AT&T/WorldCom use this module to estimate the cost of only *one* transport UNE — common transport.[189/] (Tr. at 5599.) For *every other transport UNE* in this proceeding, including those for which the module in theory could produce a cost estimate, AT&T/WorldCom rely on a restatement of Verizon's cost studies. (Tr. at 5599.) Second, not only was the original MSM IOF Module flawed (as AT&T/WorldCom admitted), but their second version filed September 21 lacked any support from Petitioners' witnesses. (Tr. at 5566-67.) In fact, none of AT&T/WorldCom's witnesses in this case could attest to or explain the changes that ultimately were made to produce MSM's new IOF Module.

188/ In accordance with the Commission's briefing schedule, Verizon VA addresses here only the transport cost issues associated with MSM's Switching and Transport module and will address the switching cost issues in a separate brief.

189/ Common transport only accounts for 3 percent of the total cost of all transport UNEs. (VZ-VA Ex. 150.)

As was admitted at the hearing, Mr. Pitkin simply "dropped" in a new module obtained from Mr. Chandler of HAI Consulting to which he did not make a single modification. (Tr. at 5574.) In the end, neither Verizon, the Commission, nor any party to this proceeding can rest assured that they know exactly what changes were made to the IOF module, where those changes came from, or who is responsible for those changes.[190/]

VI. NON-RECURRING COST MODEL

Verizon VA's non-recurring costs are, within the constraints of TELRIC, efficient and forward-looking and should be adopted by this Commission. Verizon VA's model employs a sound methodology to determine costs and makes appropriately forward-looking assumptions concerning the mix of technologies and feasibility of automating otherwise manual tasks. The task times upon which Verizon VA's non-recurring charges are based were generally developed through the use of extensive and well-grounded surveys that were evaluated for statistical reliability. Moreover, Verizon VA's charges related to ordering and provisioning reflect realistic forward-looking assumptions. Verizon VA also has distinguished correctly between recurring

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190/ In any event, the MSM's revised IOF Module continues to contain fundamental errors that render it incapable of modeling the costs of an IOF transport network. (*See* VZ-VA Ex. 163 at 2-17; VZ-VA Ex. 109 at 57-66; VZ-VA Ex. 162 at 6-17; VZ-VA Ex. 108 at 53-54.) At the most fundamental level, the IOF Module attempts the virtually impossible task of simulating the creation of an entire transport network to serve demand in Virginia, *without any data* concerning the demand between each of the nodes in the IOF network. (*See* VZ-VA Ex. 163 at 3, 9-10; Tr. at 5626 (Gansert).) AT&T/WorldCom even admit that the IOF Module cannot "identify actual SONET rings because [the module] does not have the level of information necessary to engineer SONET layers based on the point-to-point demand of nodes on the SONET rings." (AT&T/WorldCom Response to VZ-VA 15-1(a) (to be filed by petitioners as AT&T/WCom Ex. ___).) The MSM IOF Module also cannot account for the basic principle that the amount of traffic entering and exiting each node on a SONET ring is limited by the amount of traffic passing through the nodes on the ring. (VZ-VA Ex. 163 at 10-14; Tr. at 5550.)

and non-recurring costs and calculated the appropriate costs for disconnection and expedited orders.

AT&T/WorldCom, in contrast, have presented a model based entirely on the opinions of a handful of so-called "experts," none of whom have ever provisioned a single UNE. In keeping with their approach for estimating recurring costs, which seeks to lower costs regardless of any real world feasibility of their proposals and assumptions, Petitioners champion an alternative that relies extensively on technologies and procedures that are technically infeasible or prohibitively expensive, some of which they even acknowledge are nothing more than "modeling conventions" that do not reflect how *any* carrier operates in the real world. Furthermore, Petitioners proceed as if the assumptions and adjustments they would make for modeling non-recurring costs would have no impact on recurring costs. Thus, in asserting that Verizon VA ought to assume a purportedly more efficient or effective technology or procedure in order to reduce non-recurring costs, AT&T/WorldCom nowhere acknowledge the extensive offsetting increase such assumptions (assuming they even were technically feasible) would have on *recurring* rates. In contrast, Verizon VA has chosen the assumptions it used in its model because they represent the forward-looking application of currently available technology and there are either no technically feasible alternatives or application of the alternatives proposed by Petitioners (or otherwise considered by Verizon) would result, once recurring charges were accounted for properly, in *higher* overall costs. For all these reasons, Verizon VA's non-recurring model produces far more accurate and reliable forward-looking and efficient non-recurring rates than the model presented by AT&T/WorldCom.

A. Overview of Non-Recurring Cost Model

Verizon VA's NRCM accounts for costs that are associated with one-time activities performed by Verizon VA to process and provision CLECs' requests for UNEs.[191/] Non-recurring costs are incurred in response to a specific event initiated by a specific cost-causer, and generally involve easily identifiable, concrete costs. Such costs are best — and most efficiently — recovered through application of a one-time, "non-recurring," charge.

The Verizon VA NRCM employs a "bottom-up" calculation designed to measure each cost arising from an individual CLEC request for Verizon VA activity. First, Verizon VA ascertained which activities must be performed to provision each UNE or related service. (*See* VZ-VA Ex. 107 at 306.) Verizon then utilized a comprehensive survey process — addressed in more detail below — to determine the average amount of time presently required to perform each activity. Each worker was asked to provide the average amount of time it takes him or her to perform each task when that task needs to be performed at all. Once the survey results were examined and validated by Verizon VA and professional independent statisticians, Verizon VA calculated the average work time presently required to provision and disconnect each UNE.[192/]

The average work times were then modified in two ways. First, all tasks were adjusted by application of a "Typical Occurrence Factor," which, where applicable, discounted the

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191/ This issue is discussed on pages 299-323 of VZ-VA Ex. 107.

192/ Verizon VA's surveys did not cover activities performed by the Telecom Industry Services Operations Center (TISOC) and Mechanized Loop Assignment Center (MLAC) organizations. Verizon performed a work-time analysis for the TISOC organization based on observations of work order processing by TISOC personnel. Based on subsequent interviews with TISOC personnel, Andersen Consulting concluded that the resulting times were reasonable. (VZ-VA Ex. 107 at 313-14.) Verizon determined MLAC times by reviewing the number of requests for manual assignments handled over a specific time period and averaging the time it took assignment clerks to assign cables and pairs per line for those orders that could not flow through the mechanized provisioning system. (*Id.* at 315-16.)

average time to reflect instances in which a task would not be necessary for the provision of a UNE. For example, if workers estimated that a given task would take ten minutes on average but Verizon determined the task would be required only half the time, the ten-minute average would be multiplied by a 50% Typical Occurrence Factor to derive at a five-minute time. Second, Verizon subject matter experts developed a "Forward-Looking Adjustment Factor" for each task based on expectations regarding how increased mechanization and/or improved processes would either render the task unnecessary or make it more efficient as the result of future efficiency gains.

The resulting work times were then multiplied by a forward-looking labor rate to determine forward-looking costs. The Verizon VA model levelizes the labor rate over a three-year planning period for which Verizon VA believes realistic predictions can reasonably be made. Where labor is performed in Virginia, the rates are Virginia-specific. Where labor is performed by Verizon workers throughout a given region, regional labor rates are applied. For "expedited" orders, Verizon VA applied a special labor rate which took into account the extra labor costs associated with provision of such orders.

B. The Methodology Verizon VA Used To Derive Work Times Is Sound And Superior To The Methodology Employed By AT&T/WorldCom.

Verizon VA's non-recurring costs are based on a statistically sound survey of workers who actually perform the tasks necessary for the provision of UNEs.[193] AT&T/WorldCom's work times, in stark contrast, are based entirely on the opinions of a roomful of purported experts, not one of whom has ever provisioned a UNE. (*See* Tr. at 4651; VZ-VA Ex. 116 at 67-

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[193] This issue is discussed at pages 310-19 and 323-25 of VZ-VA Ex. 107 and 24-44 of VZ-VA Ex. 124.

68.) The record leaves no doubt that the Commission should approve Verizon VA's work times and the non-recurring charges based on those times.

As noted above, the work times underlying Verizon VA's NRCM are based on empirical data collected from individuals who have real-world experience in performing the tasks at issue. Verizon took care to ensure that the survey process and the methodology for assessing the resulting responses were designed to produce relevant and reliable data. First, after the survey responses were initially received, the accuracy and completeness of the sample size and the response data were reinforced by a review designed to ensure that the answers were complete and that all the persons who had been issued surveys responded to them. When individual survey responses seemed ambiguous or otherwise questionable (*e.g.*, the respondent listed a negative time or a range of times for a particular activity), Verizon cost analysts went back to the relevant organizations to obtain clarification. (*See* Tr. at 4943.)

A Verizon statistician then reviewed the distribution of work times to discern any potentially troubling outliers. Ultimately, only two individual time estimates were removed.[194/] Verizon then averaged the independent responses to create average work times.[195/] These times were reviewed for reasonableness by Verizon subject matter experts, who determined whether the average times were reasonable and consistent with their knowledge and experience. (*See, e.g.*, VZ-VA Ex. 107 at 310-313; VZ-VA Ex. 124 at 30-32.)

194/ The two omitted estimates were both "high" and would, if left in, have resulted in average estimates times in excess of those ultimately used in the model. (*See* VZ-VA Ex. 124 at 30.)

195/ In some cases, where Verizon believed activities took the same average amount of time for a set of UNEs, Verizon pooled the independent survey responses for that set and calculated one overall average time for that task, which was then applied to all the UNEs in the set.

Finally, Verizon hired NERA to review the statistical precision of Verizon VA's non-recurring cost estimates. Ultimately, based on the average work times and other inputs from the non-recurring cost model, NERA calculated 95% precision levels for Verizon VA's non-recurring costs. For all but a few UNEs, NERA calculated that there was a 95% probability that Verizon's non-recurring cost estimates were within 15% of the actual cost. (*See* VZ-VA Ex. 107 at 325.) NERA's results establish that Verizon VA's average work time estimates were sufficiently precise for the company to use in developing non-recurring costs for unbundled network elements. (*See* VZ-VA Ex. 107 at 323-325; VZ-VA Ex. 124 at 31-32.)

As the foregoing makes clear, Verizon's non-recurring cost model is based on a sound methodology that is designed to accurately estimate the time it presently takes Verizon employees to perform the tasks required to provision UNEs as a starting point for determining forward-looking times. Although Petitioners suggest that the entire methodology is suspect because of the possibility or alleged likelihood that Verizon's workers were inherently biased and thus would have overestimated work times (Tr. at 4694-95), there is no support in the record for this allegation. To the contrary, the instructions to the survey respondents explicitly stressed that the results of the process needed to be "accurate and credible." (Tr. at 4694.) Moreover, as Verizon VA's statistical expert, Mr. Gene Goldrick, observed, workers may have had an incentive to *understate* the time it takes them to perform tasks out of "fear that [high work time estimates] might come back . . . and identify or tag [the worker] as an unproductive individual." (Tr. at 4715-16.) By contrast, AT&T/WorldCom's times were developed by a small group of employees and paid consultants whose primary incentive was to keep AT&T/WorldCom's costs at a minimum. Thus, to the extent bias is to be assumed, Petitioners reside in a very fragile glass house.

AT&T/WorldCom venture a laundry list of additional criticisms of Verizon VA's survey methodology. Each of these criticisms either ignores or misunderstands sound statistical practice and should be rejected. For example, Petitioners claim that Verizon VA should have used the sample median, rather than the sample average, work times as the input for the cost study. But this is statistically unsound. Assume three workers responded with average times for a task of 1 minute, 1 minute, and 10 minutes. Under AT&T/WorldCom's proposal, Verizon VA would be compensated for only 1 minute of labor for the task instead of the 4 minutes sample average. Such a result clearly would understate the labor time Verizon VA expends in completing this task and result in Verizon VA systematically underrecovering its costs, because there clearly are times that the task takes longer than 1 minute. (*See* VZ-VA Ex. 124 at 35-36.) Similarly, Petitioners' proposal that there should have been more aggressive removal of various time estimates as purported "outliers" (AT&T/WCom Ex. 13 at 82-84) would have introduced a high degree of subjectivity into the analysis of costs and would render under-recovery *or* over-recovery far more likely, because the modified sample would fail to reflect the experience of all workers. (*See* VZ-VA Ex. 124 at 30-31.)

Similarly, AT&T/WorldCom's suggestion that responses should have been weighted based on the number of years the employee had worked for Verizon or the number of times he or she had performed the task also should not be credited. As an initial matter, such an approach would have significantly increased the burden on the respondents and added a layer of subjectivity and uncertainty to the analysis. And contrary to AT&T/WorldCom's implication, there is no reason to believe that weighting the responses, even if that had been possible, would have reduced work times. To the contrary, if longer work times were more frequent, weighting

may well have increased work times.[196] (Tr. at 4706.) Finally, even in the highly unlikely event that the absence of weighting led to a skewed result, the SMEs reviewing the average work times would have recognized that the purported average was not reasonable and made an appropriate adjustment.

AT&T/WorldCom further underscore their disregard for sound methodology by suggesting, implausibly, that Verizon VA should have had workers simply provide a "forward-looking" time estimate in the first instance. (*See* AT&T/WCom Ex. 13 at 77.) It should go without saying that this determination is more appropriately made by managers who oversee tasks and who know about and are involved in planning future mechanizations. (*See* VZ-VA Ex. 124 at 25-26.) Similarly, most workers are not qualified to estimate the "typical occurrence" of those activities they perform. Because they only observe those instances in which work must be performed manually, they have no basis on which to assess the proportion of cases in which that work is necessary.[197] (*See* VZ-VA Ex. 124 at 40-41, 43-44.)

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[196] In fact, more complex tasks, which often require more time, are often assigned to more senior technicians, so that a technician who had performed a task numerous times may report a higher average time to perform that task than a person who had performed it only a handful of times. (*See* Tr. at 4915.)

[197] AT&T/WorldCom's preference for any "methodology," however flawed, that results in the outcomes they desire is further exemplified by their argument that Verizon VA should have counted "N/A" responses or blank responses as estimates of "zero" time taken — even though the Verizon survey instruction document explicitly instructed the survey respondents to "enter N/A for Not Applicable" only when the respondent had not performed the work activity in question. Given these instructions, an "N/A" response is not relevant to the object of the work time survey, which was to determine the time it takes to perform a task *when it needs to be performed.* (*See* VZ-VA Ex. 124 at 40-41.) If Verizon VA counted "N/A" responses as estimates of zero time, the average work times used in its model would be seriously understated and inherently incorrect, because of the obvious fact that nothing gets done with infinite speed. (*See* Tr. at 4711).

Ironically, Petitioners' criticisms of Verizon's survey methods only serve to underscore the weaknesses of their proposed alternative. For example, AT&T/WorldCom's argument that there exist unreasonable variances between the minimum and maximum times reported for some tasks, or between the means and medians, demonstrate that Petitioners are fundamentally unfamiliar with the tasks they purport to evaluate in their own study. (*See* AT&T/WCom Ex. 13 at 78-79.) Many tasks singled out by AT&T/WorldCom are open-ended activities for which one should not be surprised to observe even significant variation in the respondents' estimates. Workers' average experiences and average work times will differ due to the types of orders they process, the environments in which they work (*e.g.*, rural versus urban), and their differing skills or experiences. (*See* VZ-VA Ex. 124 at 32-35.) AT&T/WorldCom's criticisms thus emphasize their own failure to account adequately for *any* differences of this sort in their own model.

Petitioners' contention that the Verizon sample size was too small is particularly ironic, given that their sample — consisting solely of a handful of purported experts — was far smaller. (*See* Tr. at 4708.) The NERA confidence interval analysis, like all analyses of its type, took into account not only the impact of the actual variation in the work times reported by the survey respondents, but also sample sizes.[198/] The fact that the precision levels were small indicates that the sample sizes used by Verizon were sufficient to measure precisely the average work times and associated UNE costs and rates. (*See* VZ-VA Ex. 124 at 39-40.) By contrast, there is no basis to assume that the "sample" used in Petitioners' model contains *any* statistical significance.

Ultimately, *all* AT&T/WorldCom's criticisms pale in the face of the manifest flaws in their model. AT&T/WorldCom do not purport to have conducted an objective or statistically meaningful analysis. Instead, their work times amount to nothing more than the speculation of

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198/ *See, e.g.*, Alan Stuart, The Ideas of Sampling 14 (3d ed. 1984).

an expert panel paid by AT&T/WorldCom who were expressly seeking to develop a cost model for these types of proceedings. (Tr. at 4649.) These so-called experts admittedly had no experience in processing wholesale UNE orders or provisioning UNEs. (Tr. at 4650-51.) Indeed, AT&T/WorldCom witness Mr. Walsh conceded that, for any given task, only "one or two" panel members even purported to have *any* expertise. (Tr. at 4653-54 ("There were usually one or two members of the SME team who might have had some personal experience, and somehow they could relate to some data that they collected or however they used to manage the people that performed that activity.") While Mr. Walsh acknowledged that the experts had different opinions concerning the appropriate task times, AT&T/WorldCom have provided no notes, minutes, or any other records of their panel's meetings. (Tr. at 4655-56.) AT&T/WorldCom's time estimates are inherently subjective and unreliable, and the Commission should reject them in favor of those resulting from Verizon's statistically sound methodology.

C. Verizon VA's NRCM Uses Appropriately Forward-Looking Assumptions.

The Verizon VA NRCM is forward-looking because it seeks to measure the non-recurring costs that Verizon VA truly expects to incur in the future as it efficiently expands and replaces its network over time.[199/] As set forth above, Verizon VA applied forward-looking adjustment factors to take account of how mechanization and process improvements by the end of a three-year planning period would reduce the time needed to perform an activity and/or the frequency with which an activity was performed. (*See, e.g.*, VZ-VA Ex. 107 at 303-05; VZ-VA Ex. 124 at 11-24, 26.) These factors were determined by a panel of experts and then reviewed

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199/ This issue is discussed in VZ-VA Ex. 107 at 316-18 and 325-35; VZ-VA Ex. 116 at 6-26 and 45-53; VZ-VA Ex. 124 at 11-24 and 41-85; VZ-VA Ex. 101 at 32-35; VZ-VA Ex. 110 at 21-26; and VZ-VA Ex. 117 at 41-45.

and updated in June 2001. As Verizon VA witness Mr. Curbelo explained, that panel consisted of "people that have a sense of the likely ability to achieve levels of productivity in certain organizations . . . people who are familiar with what we have recently rolled out and the effect that will have in the future." (Tr. at 4740.) Consistent with the Commission's regulations, these forward-looking costs are based on *currently available* telecommunications technology.[200/]

AT&T/WorldCom, by contrast, have presented a model that relies extensively on technology that is *not* currently available and will not be available for the foreseeable future, or that is not feasible in a multi-carrier environment. Moreover, even if AT&T/WorldCom's hypothesized technologies were available, nowhere in any of the models or costs proposed by Petitioners do they account for the costs that Verizon VA would have to incur to make these alleged improvements. Thus, AT&T/WorldCom play a shell game, assuming new technological systems in their non-recurring cost model in order to lower non-recurring costs, yet failing to account for the costs of these alleged systems in their recurring cost model.

1. Technological Assumptions

In the case of its non-recurring cost study, Verizon VA assumes a forward-looking mix of the technology that it actually expects to have in place at the end of the three-year planning period. As Drs. Shelanski and Gordon explained, this approach to estimating non-recurring costs is economically correct because it is based on the actual mix of technology that Verizon VA will use over time to provision UNE. (VZ-VA Ex. 101 at 34; VZ-VA Ex. 102 at 29.) Even if one assumed that the potential deployment of new technologies by a hypothetical efficient competitor had some effect on the recurring capital costs of existing facilities in the network, there is no

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200/ 47 C.F.R. § 51.505.

reason to expect this effect with respect to the *non-recurring* costs. The fact that a new technology exists would not in and of itself reduce or eliminate the labor time needed to perform non-recurring activities on existing plant. As a result, so long as it is efficient going forward for a carrier to use the existing plant instead of replacing it, the non-recurring cost estimates should reflect the mix of existing facilities expected to be used over the planning period, as Verizon VA's model does. (VZ-VA Ex. 101 at 34-35; VZ-VA Ex. 102 at 29.) And AT&T/WorldCom have themselves conceded that Verizon VA would not replace its network facilities wholesale, and instead that is "entirely rational" for Verizon VA to invest in new facilities incrementally. (AT&T/WCom Ex. 11 at 17.) Verizon VA's non-recurring cost model appropriately estimates the one-time costs of provisioning UNEs based on this rational and efficient path.

In the end, of course, the only difference in the technology mix assumed in Verizon VA's recurring and non-recurring cost studies is that the non-recurring model assumes that 26% of all loops use IDLC — the amount Verizon VA actually expects to have in place by the end of the three year planning period — while the recurring model assumes 70% IDLC. (VZ-VA Ex. 107 at 97.) Because non-recurring costs are largely labor-related, this difference in technology mix has a limited effect. Changing the UDLC/IDLC mix in the NRCM so that it matches the recurring model lowers only one category of provisioning costs: those associated with *new* UNE-Ps. (VZ-VA Ex. 201.) It has no effect on any other non-recurring cost, including the cost of the more common UNE-P migration. (*See also* Tr. at 4897.)

In contrast to Verizon VA's approach, which is based on currently available technology that is being deployed in carriers' networks, AT&T/WorldCom attempt to reduce non-recurring costs by relying on hypothetical technologies that are not currently available for deployment. For example, in keeping with arguments they raise in criticizing Verizon VA's loop study,

AT&T/WorldCom assume away the costs of provisioning an unbundled fiber-fed loop, insisting that Verizon VA could use a GR-303 interface to unbundle without the need for either a cross-connect on the main distributing frame (MDF) or a digital-to-analog conversion. As explained in detail in Part IV above, the ability to unbundle loops using a GR-303 interface in a multi-carrier environment has simply not been achieved, and the equipment that would be necessary is not even commercially available, nor is it likely to be for the foreseeable future, if at all. Indeed, AT&T/WorldCom have conceded that they "are not aware of any arrangements with any ILEC using" their approach NRC to provision loops electronically. (*See* VA-VZ Ex. 122, Attachment A (AT&T/WCom Response to VZ-VA VII-26; *see also* Tr. at 4619.)

2. Fallout and Manual Handling.

Although all parties agree that fallout generally is defined as the failure of an order that is designed to flow through OSS to do so properly, Verizon VA strongly disagrees with AT&T/WorldCom's assumption that 100% of orders and products are, or should be, designed to flow through, irrespective of their complexity. It would be neither cost-effective nor, in some cases, even possible, given currently available technologies, for Verizon VA to mechanize the handling of every type of order. AT&T/WorldCom concede that manual handling will be the most efficient means of provisioning a UNE in some circumstances, even where automating the task would have the effect of reducing non-recurring costs. (Tr. at 4658.) Yet they inexplicably fail to account for such manual work in their model at all.

Verizon VA has mechanized many ordering tasks for many elements, and takes account of further potential efficient mechanization through its Forward-Looking Adjustment Factors. But manual processing remains the most economical (and in some cases the only) way to deal with certain types of complex and/or low-volume orders. Verizon VA's model therefore

addresses not only the manual activity associated with "fallout" due to error conditions, but also the manual handling needed for requests to provision real world applications that were never meant to flow through the system, and that, in some cases, are not expected to do so in the future. (*See* VZ-VA Ex. 107 at 330-35; VZ-VA Ex. 116 at 6-11; VZ-VA Ex. 124 at 45-47.) An accurate non-recurring cost model must account for such manual handling by design, which is distinct from error-related "fallout."

While asserting that the level of automation they assume "should be" achievable (*see* Tr. at 4934), AT&T/WorldCom fail to provide any evidence to support their assertion. Indeed, they concede that they can point to no carrier or existing system that processes and provisions UNE orders with the level of automation they assume. (*See* Tr. at 4663; VZ-VA Ex. 116, Attachment B (AT&T/WorldCom Response to VZ-VA IV-21.) Moreover, while AT&T/WorldCom insist that Verizon VA should assume a greatly expanded OSS capable of processing *all* orders, they do not account for the greatly increased costs that would result from the development of such systems, even assuming it were technically feasible.[201/] Nor do they offer any reason to believe that such automation would in fact be the most cost effective method of providing UNEs. In effect, AT&T/WorldCom's position is that Verizon VA should automate all tasks, so as to lower non-recurring costs, even if automating those tasks is not the most cost efficient means of provisioning an order — but that AT&T/WorldCom has no responsibility to share the cost of that

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[201/] AT&T/WorldCom admit that, if Verizon's existing OSS do not provide the level of automation they assume, AT&T/WorldCom would have to increase the expense factor ratios to reflect the higher investment in OSS necessary to achieve the level of automation assumed in the AT&T/WorldCom model (assuming it even were technically feasible.) (Tr. at 4937.) (Of course, it is Verizon VA's position that if such OSS developments were required and possible, their costs would have to be included in the OSS UNE or recovered as explicit additional charges, not simply spread across other UNEs through the ACF process.) There is no question that Petitioners would prefer the manual handling charge to these costs.

automation. Clearly, AT&T/WorldCom cannot avoid the non-recurring charges associated with manual processing of orders and *also* avoid the charges associated with development of perfect OSS.

a) Manual Handling at the Ordering Stage

In addition to the fact that not all orders should be designed to flow through the system, AT&T/WorldCom's analysis of ordering costs is rife with additional defects. While Petitioners concede that electronic order processing will not necessarily eliminate all manual intervention, their non-recurring cost model allows for no manual processing in the ordering stage, on the theory that Verizon's OSS will catch all CLEC errors and send orders back to the CLEC automatically. They contend that any other need for manual processing is not the CLEC's responsibility. AT&T/WorldCom's theory is misguided for two reasons. First, orders will continue to require manual handling, even when CLEC error is not the cause of the fallout, and even in a forward-looking environment. Second, AT&T/WorldCom provide no support for their theory that only fallout caused by CLECs can properly be charged to them.

AT&T/WorldCom erroneously suggest that Verizon VA's costs associated with manual processing include costs for resolving format errors. (Tr. at 4662-63.) Yet Verizon VA treats virtually all orders of the type Petitioners cite precisely as AT&T/WorldCom wish: by returning them to the CLEC *without any manual processing*. (*See* VZ-VA Ex. 116 at 12-13; VZ-VA Ex. 124 at 48-52.) Just as AT&T/WorldCom suggest, before being submitted to the OSS that governs ordering, a CLEC request first passes through a "gateway" OSS, which will reject entries that contain most formatting errors.

Contrary to Petitioners' contention, however, this gateway does not eliminate all fallout. The gateway OSS will not catch "logical errors" — those that are formatted and punctuated as

expected but that contain information incompatible with downstream ordering and/or provisioning systems. Moreover, in some cases, orders are sent for manual handling by design. For example, an order for five or more loops will be designated for manual handling so that Verizon can perform a facilities check to ensure that there are sufficient available lines before providing a firm order confirmation. This practice has been demanded by both Verizon's retail and wholesale customers and in the end is more cost efficient. (Tr. at 4817-18.) Contrary to AT&T/WorldCom's suggestion, prices in a competitive market generally do account for the costs of managing inventory, even though the associated charge often is not itemized and separately identified. Verizon VA's approach is more efficient than the alternatives and thus actually has resulted in *lower* UNE prices.

The Commission should approve Verizon VA's NRCM as it relates to the ordering process. Verizon VA has assumed a realistic forward-looking ordering environment in which orders that should be processed by automated systems *are* so processed, and in which "fallout" — that is, the failure of an order that is designed to flow through the system to do so — is minimized. Indeed, the Commission has already concluded elsewhere that Verizon provides efficient pre-ordering and ordering processes to competitors,[202/] and has deemed criticisms of Verizon's ordering interfaces "not . . . persuasive."[203/] Further, this Commission has noted that, when orders *do* fall out, Verizon VA handles those orders efficiently, commending Verizon for "timely and accurately processing" such orders.[204/]

202/ *Pennsylvania § 271 Order* at 17448 ¶¶ 48-50.

203/ *See, e.g., Massachusetts § 271 Order* at 9015-6 ¶¶ 53.

204/ *Id.* at 9032 ¶ 81.

b) Manual Handling at the Provisioning Stage

Like Verizon VA's ordering-related non-recurring charges, Verizon VA's provisioning-related charges are appropriate and should be adopted. Where possible and efficient, Verizon VA's OSS facilitates the assignment of network inventory and the fulfillment of the service order request. In some cases, however, special or complex CLEC requests will require manual handling by design in the provisioning phase, just as in the ordering phase. This will continue to be the case for some time. In addition, orders that are designed to flow through will, of course, sometimes "fall out" of the system. Verizon's model reflects a conservative fallout rate, accounting for all cases in which manual processing due to errors will be required, both now and on a forward-looking basis, through application of its Typical Occurrence and Forward-Looking Adjustment Factors. Thus, provisioning charges will continue to incorporate costs stemming from manual processing. (*See generally* VZ-VA Ex. 107 at 334-35; VZ-VA Ex. 124 at 56-58.)

AT&T/WorldCom's model is premised upon a 2% fallout rate, but they can point to no system or carrier that surpasses the performance levels assumed by Verizon VA's NRCM, let alone achieves Petitioners' fantastically low fallout levels. Indeed, when asked in discovery to name any LEC that has "achieved a 2% or better fallout rate for complex, Centrex, ISDN, and/or designed orders," they could not. (*See* VZ-VA Ex. 124 Attachment B (AT&T/WCom Response to VZ-VA IV-20.)) At the hearings, in response to the question "[A]re you saying that the fallout rate in your model is equivalent to that [] an ILEC would achieve in the real world?," AT&T/WorldCom's panel answered "[N]o, we are not saying that at all . . . We are only assessing the 2% assessable really to the CLEC." (*See* Tr. at 4956.) In other words, AT&T/WorldCom admit that 2% fallout is not achievable in the real world, but contend that CLECs should only be charged for that amount of fallout, which they imagine is the amount

attributable to CLEC error. And, as with the ordering stage, AT&T does not even purport to account for manual handling by design.

While AT&T/WorldCom dredge up a variety of complaints about some of the Verizon VA functional organizations involved in manual handling at the provisioning stage, these complaints are unavailing, as these organizations are expected to remain a vital part of the provisioning process, even in a forward-looking environment. For example, manual intervention by the Mechanized Loop Assignment Center (MLAC) may result from the need to rearrange the utilization of Verizon VA loop facilities to permit successful assignment of the CLEC order. Further, some orders, by virtue of their complexity, are simply not designed to flow through the system, and will require MLAC intervention.[205] (*See* VZ-VA Ex. 124 at 58-59.) The same is true of the Recent Change Memory Administration Center, which will necessarily continue to conduct manual switch translation work to perform hotcuts and local number portability migrations, especially on complex accounts, and to manage last-minute postponements and cancellations in order to prevent end user service outages. (*See* VZ-VA Ex. 124 at 60-61.)

The Circuit Provisioning Center (CPC) also will remain an essential component of Verizon VA provisioning efforts. Circuits routed to CPC for design are, by their nature, special, and invariably require some level of "custom" design and some degree of human coordination. No automated tool can substitute for the human judgment that is necessary to respond to the unique demands faced by the CPC. (*See* VZ-VA Ex. 116 at 25-26; VZ-VA Ex. 124 at 61.)

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[205] AT&T/WorldCom complain that application of MLAC fallout within the NRCM is exactly the same for every UNE. However, this is not surprising, as the incidence of CLEC error and other phenomena giving rise to MLAC activity is similar across all UNE products. To the extent that there is variation among MLAC fallout rates, CLECs are *advantaged* by Verizon VA's assumption of a 4% fallout rate, because if anything, the actual rate for any given individual UNE product is likely *higher* than that. (*See* VZ-VA Ex. 124 at 59.)

Oddly, AT&T/WorldCom acknowledge that certain types of UNEs and services inherently require design work, yet then turn around and assume that they will require work by the CPC in only 2% of the cases. (*See, e.g.* AT&T/WCom Ex. 23 (Non-Recurring Technical Assumptions Binder).) Finally, as described in greater detail below, the Regional CLEC Coordination Center (RCCC) is critical to the provision of CLEC services generally and to hotcuts in particular. A hotcut requires the involvement of various Verizon organizations and, importantly, precise coordination with the CLEC. The RCCC is responsible for ensuring that a loop is simultaneously disconnected from Verizon VA and connected with the CLEC's facilities so as to minimize interruption of service to the end user. In several contexts, in fact, AT&T has vociferously demanded the creation of further checkpoints in Verizon's hotcut process. (VZ-VA Ex. 124 at 62.) Yet here, of course, AT&T attempts to label those very functions "unnecessary." Moreover, AT&T/WorldCom's various criticisms of specific RCCC tasks demonstrate repeated misunderstandings (or misrepresentations) of that organization's functions. Its tasks are necessary, distinct from those performed by other functional organizations, and fully described in the Verizon VA's model and testimony. (*See* VZ-VA Ex. 107 at 333-34; VZ-VA Ex. 116 at 22-25; VZ-VA Ex. 124 at 61-69.)

D. Verizon VA Correctly Structures Its Non-Recurring Costs.

AT&T/WorldCom raise several criticisms regarding the manner in which Verizon VA has structured its non-recurring costs, but those criticisms should be rejected.[206/] Verizon VA has distinguished appropriately between recurring and non-recurring costs, and its other choices

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206/ This issue is discussed at pages 299 and 321-23 of VZ-VA Ex. 107, 72-76 of the Ex. 116, 89-103 of the Ex. 124, and 15-20 of VZ-VA Ex. 110.

— such as the application of disconnection costs at the time of connection and the development of charges for "expedited" orders — represent sound ratesetting practice.

1. Distinguishing between Recurring and Non-Recurring Costs

Verizon's non-recurring cost model appropriately distinguishes between recurring and non-recurring costs. TELRIC mandates that costs be recovered in a manner that reflects the way they are incurred.[207] Verizon VA is therefore entitled to recover one-time costs caused by a CLEC order from that CLEC on a non-recurring basis. Such treatment is especially appropriate, where the cost (a) is occasioned by the particular CLEC order and arises from activities that would not be undertaken but for that order, and (b) reflects a "one-time" expenditure whose total magnitude is not dependent on the length of service, and therefore would be subject to over-recovery or under-recovery if billed on a recurring basis. This approach is not only sound ratesetting practice; it also has been validated by this Commission.[208] (*See* VZ-VA Ex. 124 at 89-101.)

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[207] *See Local Competition Order* at 15873-74 ¶¶ 742-43.

[208] For example, the Commission has previously stated:

> We define non-recurring costs as the one-time expenses incurred, upon the request of a customer, in installing, moving, rearranging or terminating an access service from the initial receipt of a service order to the point at which service is provided or terminated, as the case may be. . . .
>
> We see no reason why the LECs should not recover through an NRC their full one-time costs of providing, terminating or modifying an access service. This is consistent with our policies encouraging the recovery of costs from cost causers and would reduce the subsidy of short-term users by longer term customers.

Memorandum Opinion and Order, *In the Matter of Investigation of Interstate Access Tariff Non-Recurring Charges*, 2 FCC Rcd 3498, 3501-02 ¶¶ 32-33 (1987)

Although the Commission has indicated that states may require ILECs to recover some otherwise non-recurring costs through recurring charges,[209/] the most efficient and appropriate means of recovering such costs is through a one-time, non-recurring charge to the cost-causer. As Dr. Shelanski explained,

> It would be inefficient and impractical to spread such a concrete expense over an estimate of future usage, which could later prove to understate or exaggerate costs. Moreover, failing to recover the costs from the cost-causer typically creates perverse economic incentives and uneconomic behavior by the CLECs. In order to ensure that the CLEC has the correct incentives to target customers, invest in facilities, and establish efficient prices, it should be required to pay the full amount of the costs that are a direct result of its actions.

(VZ-VA Ex. 110 at 18-19.) Indeed, the Commission itself has observed that "Commission policy favors economically efficient prices that reflect the manner in which costs are incurred. A LEC that must make a non-recurring expenditure to provide 500 access service should not generally be forced to recover its costs as if it were using technology that causes a recurring charge. Such a mechanism would distort the prices paid by access customers."[210/]

Requiring Verizon VA to recover otherwise non-recurring costs through recurring charges would inappropriately shift the risk of cost underrecovery from the CLEC to the ILEC and introduce economic inefficiency that would distort the development of competition. If a carrier incurs a one-time cost caused by the connection of service and can only recover that cost through a recurring charge, then it bears the risk that it will lose the customer and not recover that one-time cost. The requesting CLEC itself should bear that risk. Otherwise, as Dr.

209/ *Local Competition Order* at 15875 ¶ 749.

210/ Order, *In the Matter of MCI Telecommunications Corp. Application for Review*, 12 FCC Rcd 16565, 16571 ¶ 12 (1997).

Shelanski explained, "the CLEC will not fully consider the long-run costs of serving customers, will have incentive to over-expand, and will shift substantial risks of its own business decisions to the ILEC and, perhaps, to future carriers. Conversely, by shifting substantial risks onto the ILECs, AT&T/WorldCom's proposal would require the ILEC's cost of capital to increase." (VZ-VA Ex. 110 at 20.)

Any concern the Commission might have with respect to whether certain non-recurring charges could result in large initial capital outlays that allegedly might discourage entry is not implicated by Verizon VA's non-recurring cost model here. As discussed below, the primary cost as to which the parties disagree concerning its recurring or non-recurring classification is the cost for a field dispatch to place a cross-connect at the serving area interface. But unlike, for example, the cost of constructing a collocation cage, the cost of a field dispatch is small, is incurred only when needed to provision a particular loop to a particular end-user (from whom the CLEC can recover the cost if it chooses), and is a typical provisioning cost incurred by all carriers, including Verizon VA itself. This non-recurring charge cannot be said to be a barrier to entry.

AT&T/WorldCom nevertheless argue that a cost should be deemed recurring whenever the activity in question might possibly benefit some other CLEC, or Verizon VA itself, at some hypothetical point in the future, even if the current requesting CLEC directly caused the cost to be incurred. (*See* AT&T/WCom Ex. 2 at 9-11; AT&T/WCom Ex. 8 at 29-31.) But the Commission has previously rejected such a theory in relation to interconnection: "To the extent that the equipment needed for expanded interconnection service is dedicated to a particular interconnector, . . . requiring the interconnector to pay the full cost of the equipment up front is

reasonable . . . *regardless of whether the equipment might be reusable.*"[211/] AT&T/WorldCom's proposal would result in the same inappropriate risk-shifting and economic inefficiency caused by a more general requirement to recover non-recurring costs through recurring charges. Shifting the risk of non-recovery of the initial non-recurring cost to the ILEC would the CLEC cause to receive distorted market signals, and increase the ILECs' cost of capital.

AT&T/WorldCom also wrongly suggest that Verizon may not properly impose non-recurring charges on CLECs for any tasks for which it bills retail customers through recurring rates. This argument confuses the classification of *costs* with how those costs are recovered through *rates*. The goal of a cost study is to identify the costs the ILEC incurs in providing UNEs to a CLEC and the manner in which those costs are incurred and then to shift that same cost structure to the CLEC. As Verizon VA's witnesses explained:

> **MR. CURBELO:** . . .[W]e identify the non-recurring costs for the CLECs in the same manner in which we incur those non-recurring costs. . . . And they, in turn, could recover . . . from their end users the way we recover from our end users in the retail side of the market.
> **MR. PEDUTO:** Or any way they want.

(Tr. at 4785; *see also* Tr. at 4772, 4781.) That is, even if Verizon VA chooses (or is required to) recover a non-recurring cost through a retail recurring rate, that does *not* transform the nature of the cost itself. Instead, the CLEC should, in parity with the ILEC, incur the same non-recurring cost.

Finally, despite AT&T/WorldCom's contentions to the contrary, Verizon VA will not double recover costs through recurring and non-recurring charges. In calculating its ACFs,

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211/ Second Report and Order, *Local Exchange Carriers' Rates, Terms and Conditions for Expanded Interconnection through Physical Collocation for Special Access and Switched Transport*, 12 FCC Rcd 18730, 18750 ¶ 33 (June 13, 1997) ("Second Report and Order") (emphasis added); *see also Local Competition Order* at 15876 ¶ 751.

Verizon VA subtracted from its base year expense figure all non-recurring revenues it received during that year. (Tr. at 4762, 4765-66; VZ-VA Ex. 107 at 21.) These non-recurring revenues serve as a proxy for the non-recurring costs Verizon VA incurred during that year. By removing those revenues before calculating the ACFs, Verizon VA ensured that it will not double recover for non-recurring costs through application of the ACFs on the recurring side.

2. Collection of Disconnect Costs at the Time of Connection.

Verizon VA's NRCM includes disconnection costs among the non-recurring costs for which Verizon VA charges when it connects a CLEC's unbundled service. Verizon VA's NRCM appropriately discounts the disconnect costs for the time value of money, based on a 2.5-year forecasted service life and a 12.95% cost of capital. (*See* VZ-VA Ex. 124 at 102.) This approach represents the industry norm, is entirely reasonable, and should be approved by the Commission.

Inclusion of disconnect costs at the time of connection is the only way to ensure that such costs are attributed to the entity that caused them and that they will, in fact, be recovered. Permitting recovery only at the time of disconnection would inappropriately shift the risk of non-recovery to ILECs, a particularly inequitable result since the ILEC has no choice but to provide UNEs to any requesting CLEC, regardless of the CLEC's financial qualifications or stability. Although the risk of uncollectables may be relatively low in the case of carriers such as AT&T and Worldcom, that is unquestionably not the case, in Verizon's experience, for all CLECs, whether due to financial troubles or other reasons. And, given the effect of the Commission's "pick and choose" rule,[212/] any CLEC will be able to take advantage of whatever provision the

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212/ 47 C.F.R. § 51.809.

Commission imposes here with respect to disconnect costs. Thus, it is appropriate for Verizon VA to include forward-looking disconnect costs in its NRC model. (*See* VZ-VA Ex. 107 at 335-36; VZ-VA Ex. 124 at 101.)

3. Charges For Expedited Orders.

Verizon VA's model properly includes increased rates for expediting orders. Additional charges for expedited orders are appropriate because requests for expedited service require adjustments to workload and schedules, and labor performed out-of-hours is paid at a premium over normal wages. (*See* VZ-VA Ex. 107 at 322-323; VZ-VA Ex. 116 at 75-76.) These orders thus simply cost more to fill than other orders, and the excess costs are due exclusively to the CLEC's demands. While AT&T/WorldCom's model includes no expedite charges, they have not even suggested such charges are inappropriate, and the Commission should accordingly accept them.

E. Specific Costs.

In a further effort to understate non-recurring costs, AT&T/WorldCom present a hodgepodge of criticisms concerning specific categories of provisioning tasks in Verizon VA's model and propose to assume away the costs of virtually all such tasks. Even a brief examination of these criticisms reveals that they are misguided and based on assumptions that are contrary to how efficient, real-world carriers operate.[213/]

213/ These issues are discussed at pages 22-45 of VZ-VA Ex. 116 and 69-89 of VZ-VA Ex. 124.

1. Hotcuts

In addition to their fantasy assumptions about electronic unbundling of stand-alone loops over fiber feeder, discussed above, AT&T/WorldCom complain about Verizon VA's procedures for provisioning loops using hotcuts. Ironically, these same procedures are in place precisely because the CLECs demanded them during industry meetings and Section 271 collaboratives. (VZ-VA Ex. 124 at 75-76, 80-81.) AT&T, in particular, has repeatedly requested modifications to the hotcut process that increase the time and expense associated with each cutover. In any event, Verizon VA's hotcut procedures comport with industry standards and are necessary to ensure that end-user service is not interrupted during a migration. As this Commission has noted, "[t]he ability of a BOC to provision working, trouble-free loops through hot cuts is of critical importance in view of the substantial risk that a defective cut will result in end-user customers experiencing service disruptions that continue for more than a brief period."[214/]

Yet in this proceeding, AT&T/WorldCom seek to assume away all the coordination tasks necessary to ensure trouble-free cutovers and to treat hotcuts as if they were a simple cutover of a retail customer from one part of the Verizon switch to another. The fact is, however, that hotcuts between carriers require careful — and sometimes time-consuming — coordination. AT&T/Worldcom's contrary characterization of hotcuts exposes their fundamental misunderstanding of the wholesale provisioning process. Thus, while AT&T/WorldCom criticize the frequency of travel between offices associated with the hotcut process (AT&T/WCom Ex. 116 at 62), the Commission has specifically "commend[ed] Bell Atlantic for" responding to CLEC demands by agreeing to engage in a pre-cutover visit to minimize

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214/ *New York § 271 Order* at 4109 ¶ 299.

problems and observed that such an additional visit "appears to be critical to the proper functioning of the hot cut process."[215/] Indeed, Verizon VA's analysis suggests that if the procedures AT&T/WorldCom advocate had been in place, the frequency of service interruptions would have increased substantially. (VZ-VA Ex. 124 at 75.) The Commission should therefore approve Verizon VA's non-recurring charges for loop provisioning.

2. Central Office Wiring

AT&T/WorldCom also make two assumptions in an effort to eliminate or drastically reduce non-recurring costs for central office (CO) wiring. Both, however, are fundamentally untenable.

a) 100% Dedicated Inside Plant ("DIP") Assumption.

Petitioners improperly assume 100% Dedicated Inside Plant ("DIP") in their proposed costs for UNE-P and resale, even though no efficient carrier would implement that approach. Indeed, once again, AT&T/WorldCom have assumed use of a technique that they acknowledge has not been adopted by any carrier that they can identify, but rather is only some kind of a "modeling convention." (*See* Tr. at 4665; VZ-VA Ex. 116, Attachment B (AT&T/WCom Response to VZ-VA IV-28).) The Commission should reject AT&T/WorldCom's hypothetical musings.[216/]

215/ *New York § 271 Order* at 4052 ¶ 186.

216/ As Verizon VA's witness Mr. Peduto acknowledged, in a small number of situations, the jumper would still be in place when a CLEC requests a new UNE-P, and Verizon VA's typical occurrence factor for CO wiring tasks in connection with UNE-P should be somewhat less than 100%. (Tr. at 4843-44.)

Use of 100% DIP is not appropriate in the current market and would increase costs to CLECs and end users. In a 100% DIP environment, Verizon VA would have to add significant additional switching equipment so that every incoming cable to the central office could be pre-connected to a piece of switching line equipment. In other words, there would have to be switch line equipment dedicated to each feeder pair entering the central office. This would require Verizon VA to increase the amount of switching equipment drastically — and to charge CLECs for such equipment in its recurring rates. Because the utilization factor for feeder cable is less than 100% for sound engineering reasons, it simply makes no economic sense to purchase and install enough switching equipment to facilitate connection of all feeder pairs to the switch simultaneously. (*See* VZ-VA Ex. 116 at 28.)

Indeed, AT&T/WorldCom's only defense of the 100% DIP assumption is that it is a "modeling convention," not an assumption about how carriers in fact operate. (*See* Tr. at 4966.) However, for non-recurring UNE rates to have any economic validity, they must be based on the costs that the incumbent, acting efficiently, incurs in performing the tasks necessary to serve their wholesale customers. TELRIC demands, in short, that "costs should be recovered in a manner that reflects the way they are incurred."[217/] Verizon VA incurs the costs of running a jumper from the MDF to the Verizon switch for new UNE-P service as a one-time cost. To ignore this reality in favor of "modeling conventions," as AT&T/WorldCom would have it, is to consign the model to an inevitably inaccurate measure of costs.

217/ *See Local Competition Order* at 15873 ¶ 742.